FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

26 January to 1 February, 2014 (Week 05)

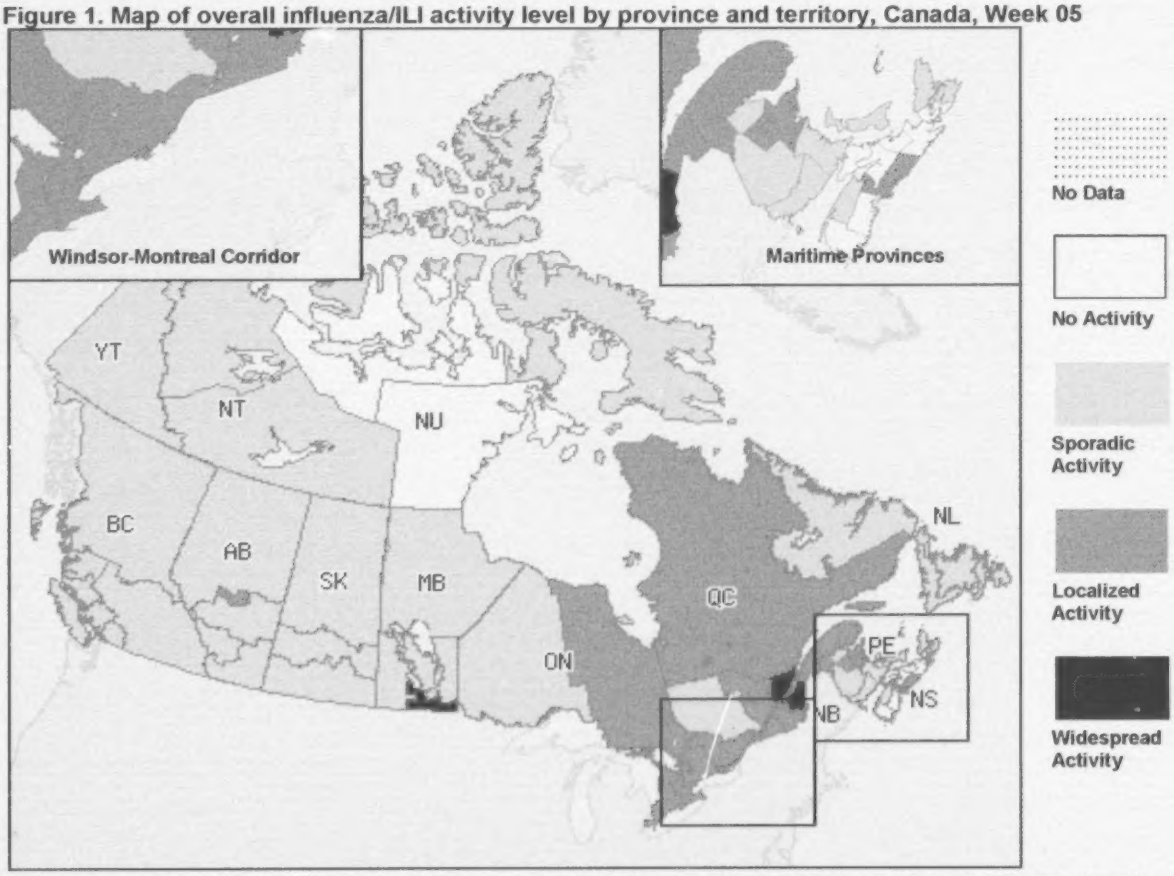
Overall Summary

- In week 05, overall influenza activity continued to decrease in Canada, with most activity identified in eastern provinces.
- The influenza A(H1N1) virus remains the most common influenza virus circulating this season. A Canadian vaccine effectiveness study has estimated that immunization with the 2013-14 seasonal influenza vaccine has been 74% effective in reducing doctors' visits (Skowronski, Chambers, Sabaiduc *et al.*, 2014). Influenza B virus detections are also starting to increase.
- Adults 20-64 years of age continue to be more affected by influenza this season.
- To week 05, 2,588 hospitalizations have been reported, slightly decreased compared to the same period last season. However, a greater proportion of hospitalizations have been admitted to the ICU. One hundred and thirty-eight deaths have been reported, which represents a similar proportion of deaths compared to last year.
- Overall influenza activity in Canada during the 2013-14 season has been similar to the 2012-13 season and is within expected levels for this time of year.

Influenza/ILI Activity (geographic spread)

In week 05, one region in Quebec and one in Manitoba reported widespread activity, and 15 regions (in AB(1), ON(6), QC(4), NB(3) and NS(1)) reported localized activity (Figure 1). Compared to week 04, activity was stable or decreased in regions in AB, ON, PE, NL and NU; stable in BC, SK, NT and YT; and stable or increased in regions in MB and QC. A mixed pattern of activity was reported among regions in NB and NS.

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 05

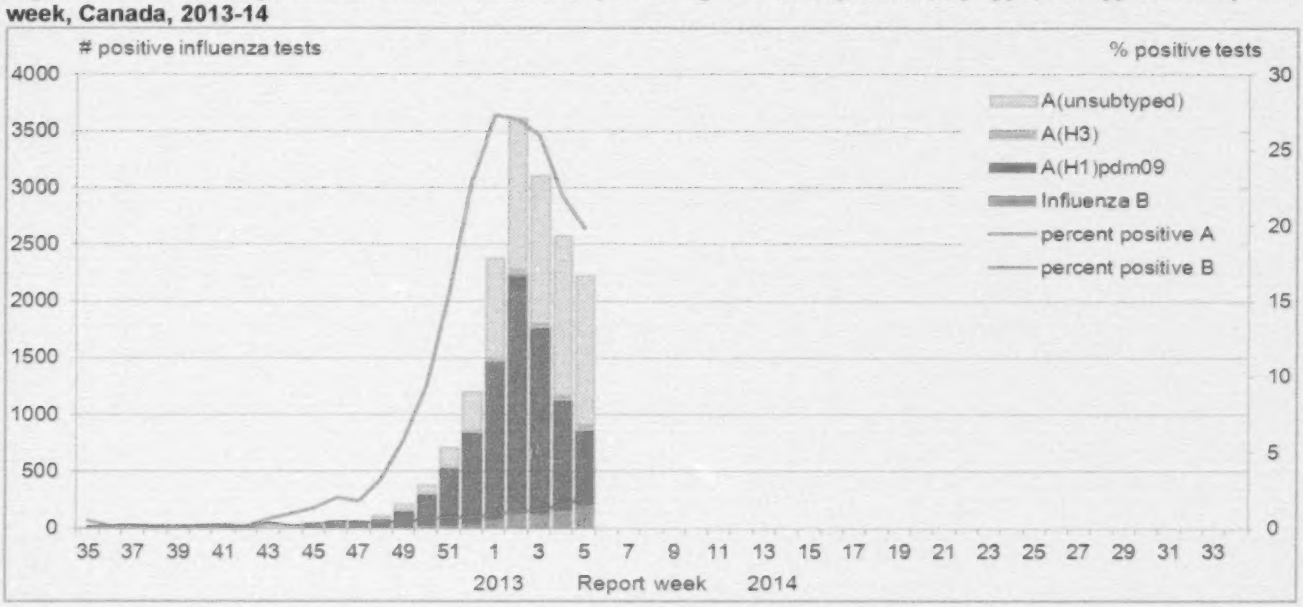


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

The number of positive influenza tests decreased for the third week in a row, from 2,568 in week 04 to 2,219 in week 05. The percentage of positive influenza tests decreased from 23.5% to 21.9% (Figure 2). Cumulative influenza virus detections to date remain predominantly influenza A (95%), and among those subtyped, 97% (8,679/8,977) were A(H1N1)pdm09. However, the percentage of positive tests for influenza B has been rising slowly in recent weeks to 9.5% of influenza detections in week 05 (Table 1). Among the 13,241 cases for which information on age and type/subtype has been received this season, 57.4% were 20-64 years of age and 15.5% were ≥65 years of age, which is different from the proportions observed during the 2012-13 season when 33.1% of cases were 20-64 years of age and 41.2% were ≥65 years of age (Table 2).

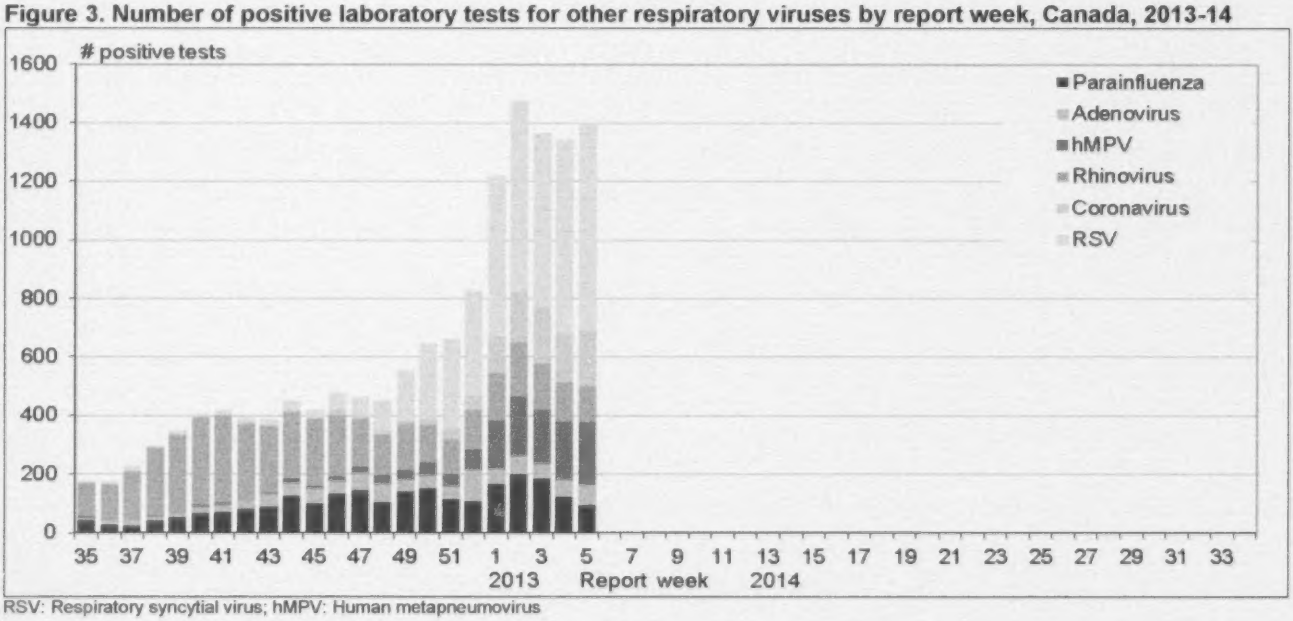
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2013-14



The number of positive tests for RSV continued the gradual increase observed since late November 2013. The percentage of the total number of tests that were positive has fluctuated during this period, but increased during the past two weeks. RSV in Canada shows a seasonal pattern with a broad peak over the winter months. The percentage of positive tests for coronavirus and human metapneumovirus continued to increase in week 05 (Figure 3).

For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2013-14



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2013-14

Reporting provinces[1]	Weekly (January 26 to February 1, 2014)					Cumulative (August 25, 2013 to February 1, 2014)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	165	127	16	22	7	1474	1347	69	58	44
AB	151	103	2	46	14	3268	3086	33	149	57
SK	94	67	1	26	6	1177	848	2	327	10
MB	71	55	0	16	0	418	276	1	141	13
ON	474	127	24	323	25	4566	2094	185	2287	110
QC	715	100	1	614	140	3375	425	3	2947	580
NB	234	30	0	204	1	1157	364	1	792	4
NS	23	20	2	1	0	86	63	4	19	0
PE	29	29	0	0	0	72	72	0	0	0
NL	53	0	0	53	17	258	104	0	154	99
Canada	**2009**	**658**	**46**	**1305**	**210**	**15851**	**8679**	**298**	**6874**	**917**
Percentage[2]	90.5%	32.8%	2.3%	65.0%	9.5%	94.5%	54.8%	1.9%	43.4%	5.5%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2013-14

Age groups (years)	Weekly (January 26 to February 1, 2014)					Cumulative (August 25, 2013 to February 1, 2014)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	218	53	0	165	15	2307	1122	18	1167	98	2405	18.2%
5-19	89	26	0	63	24	963	562	15	386	126	1089	8.2%
20-44	246	89	2	155	27	3886	2241	23	1622	161	4047	30.6%
45-64	215	69	1	145	32	3321	1891	29	1401	234	3555	26.8%
65+	126	26	1	99	53	1713	740	56	917	338	2051	15.5%
Unknown	0	0	0	0	0	94	81	5	8	0	94	0.7%
Total	894	263	4	627	151	12284	6637	146	5501	957	13241	100.0%
Percentage[2]	85.6%	29.4%	0.4%	70.1%	14.4%	92.8%	54.0%	1.2%	44.8%	7.2%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Influenza Strain Characterizations

During the 2013-2014 influenza season, the National Microbiology Laboratory (NML) has antigenically characterized 750 influenza viruses [43 A(H3N2), 635 A(H1N1)pdm09 and 72 influenza B]. The vast majority (99%) of viruses were similar to the strains recommended by the WHO for the 2013-14 seasonal influenza vaccine. Two A(H1N1)pdm09 viruses showed reduced titres to antiserum against the reference A/California/07/2009 strain. Six influenza B viruses were similar to the strain recommended by the WHO for the 2011-12 vaccine (Figure 4).

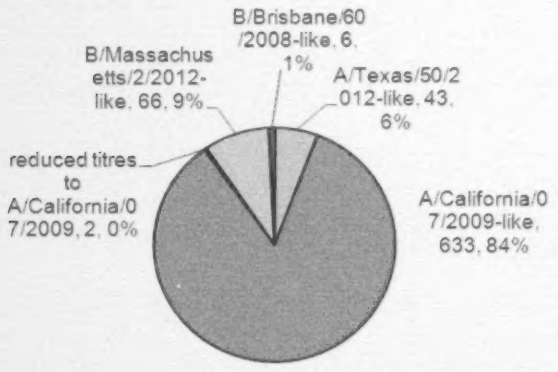


Figure 4. Influenza strain characterizations, Canada, 2013-14, N = 750

The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2013-2014 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011b (e.g. A/Texas/50/2012), and a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Antiviral Resistance

During the 2013-2014 influenza season, NML has tested 483 influenza viruses for resistance to oseltamivir and 479 viruses for resistance to zanamivir, and all were sensitive. All 418 influenza A viruses tested for amantadine resistance were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2013-14

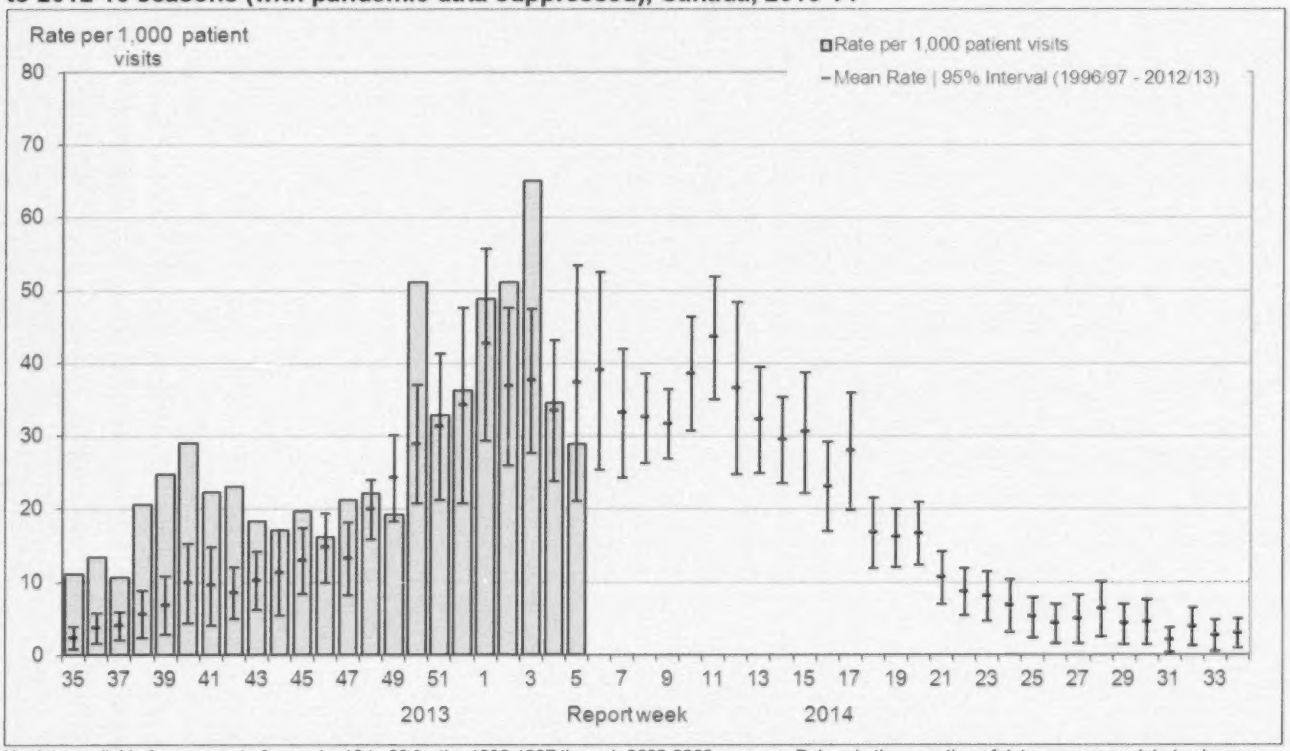
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	34	0	34	0	40	40 (100%)
A (H1N1)	404	0	400	0	378	378 (100%)
B	45	0	45	0	NA[1]	NA[1]
TOTAL	483	0	479	0	418	418 (100%)

[1] NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate continued to decrease from 34.6/1,000 in week 04 to 28.8/1,000 in week 05; which is within the expected range for week 05 (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2013-14

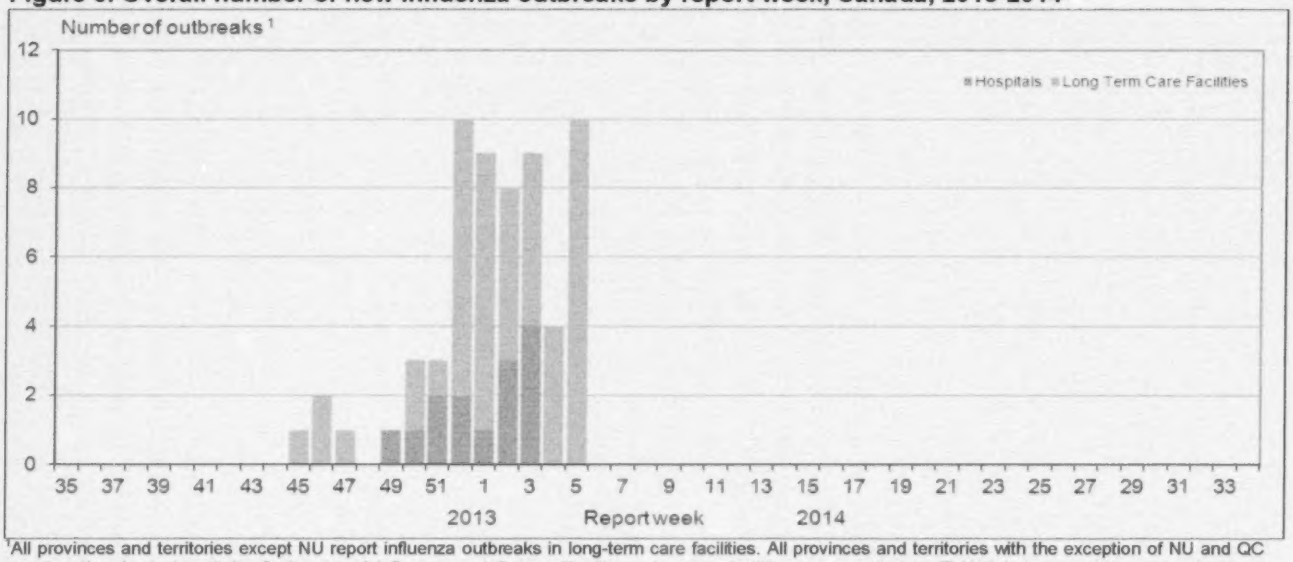


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. The number of sentinel physicians in each province or territory is as follows: BC(21), AB(80), SK(11), MB(18), ON(169), QC(14), NB(29), NS(26), PE(4), NL(16), NU(1), NT(14), YT(13). Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 05, ten new influenza outbreaks were reported in long-term care facilities (Figure 6). In addition, five outbreaks of influenza-like-illness were reported: three in schools and two in other facilities or communities.

Figure 6. Overall number of new influenza outbreaks by report week, Canada, 2013-2014

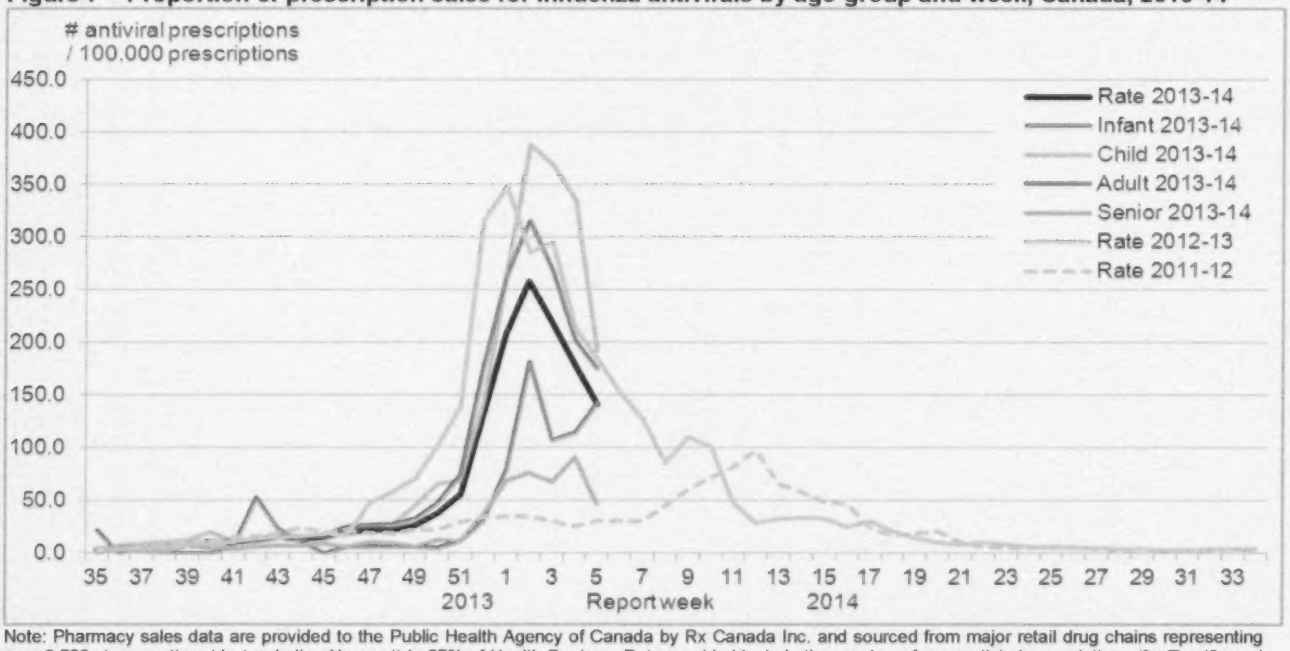


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

The rate of prescriptions for influenza antivirals declined for the third week in a row, following the downward trend in laboratory detections of influenza. In week 05, the largest proportion of prescriptions for antivirals continued to be among children 2-18 years of age followed by adults 19-64 years of age. The proportion of prescriptions for antivirals increased for infants <2 years of age in week 05 (Figure 7).

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2013-14



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 05, 50 new laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network, compared to 56 in week 04. All but one of the hospitalizations in week 05 were cases with influenza A (Figure 8a). Forty-one (82%) of the cases were <5 years of age. Eight ICU admissions were reported in week 05, one child under 6 months of age, two children 6-23 months of age, three 2-4 years of age, and two 5-9 years of age; all with influenza A. No deaths were reported.

To date this season, a total of 410 influenza-associated paediatric hospitalizations have been reported by the IMPACT network, 95% of which have been influenza A, and almost all of those subtyped were A(H1N1)pdm09. Children under 5 years of age represent 78.5% of cases to date (Table 4). Sixty-five ICU admissions have been reported; all but three cases with influenza A (the majority A(H1N1)pdm09), and 26 (40%) have been among children under 2 years of age (Figure 9a). Among the 55 ICU cases with available data, 38 (69%) were reported to have underlying medical conditions. No deaths have been reported.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 05, 28 new laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations reported through active surveillance by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network, compared to 84 in week 04. Among cases in week 05, 26 (92.9%) were influenza A, of which four were A(H1N1)pdm09 and 22 were A(unsubtyped). One case with influenza B and one case without information on the influenza type were reported (Figure 8b). The majority of hospitalizations occurred among adults ≥45 years of age (22; 78.6%). Three ICU admissions were reported in week 05: one case in an adult 45-64 years of age and two cases ≥65 years of age. One death was reported in an adult 45-64 years of age with influenza A(unsubtyped).

To date this season, 767 influenza-associated hospitalizations have been reported by the PCIRN-SOS network, 736 (96.0%) with influenza A, predominantly A(H1N1)pdm09 (Table 5). ICU admission was required for 137 hospitalizations, all but six of which were cases with influenza A. More than three quarters of hospitalizations and over 85% of ICU admissions were ≥45 years of age. Of the 125 ICU admissions with available information, 85.6% (107/125) were reported to have at least one comorbidity. Of the 115 ICU admissions with information on influenza vaccination, 83 (72.2%) reported not having been vaccinated this season. Thirty-eight deaths have been reported, all with influenza A (22 A(H1N1)pdm09, one A(H3N2) and 15 A(unsubtyped)); five cases 20-44 years of age, 19 cases 45-64 years of age and 14 cases ≥65 years of age (Figure 9b).

Note: PCIRN-SOS conducted passive surveillance from April 30th to November 14th, 2013. Cases reported during this period were identified by laboratory detection of influenza among patients admitted to participating hospitals. Active surveillance began November 15th during which time PCIRN site coordinators investigate cases potentially related to influenza. Data from both active and passive surveillance reported during the 2013-14 season are included in this report. The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2013-14

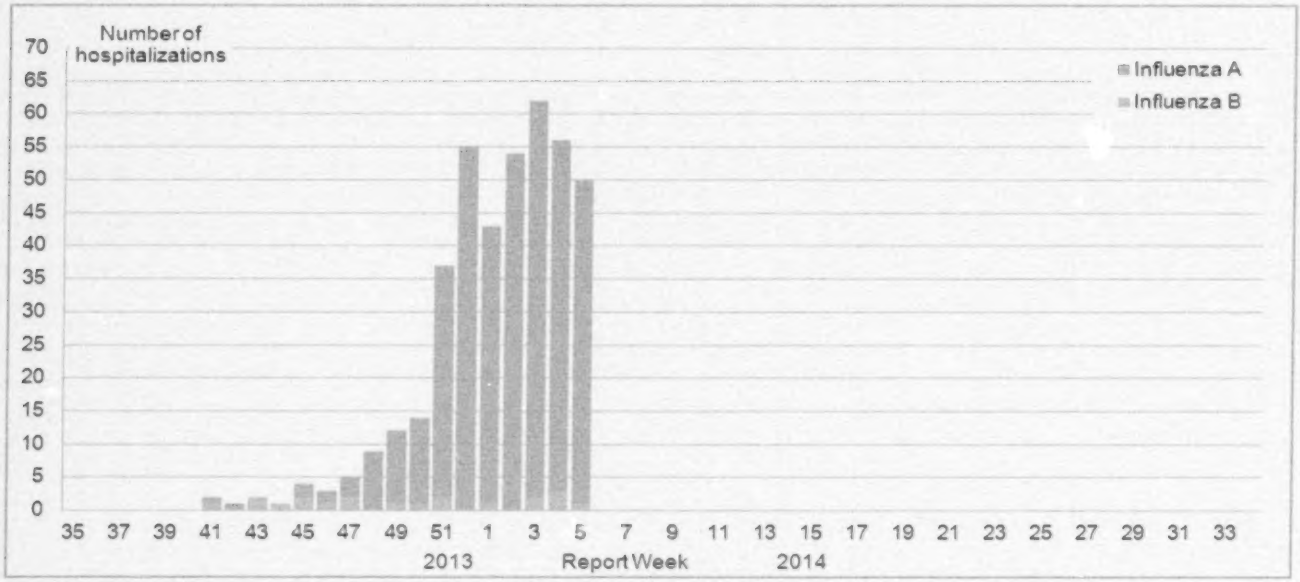
Age groups	Cumulative (25 Aug. 2013 to 1 Feb. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	78	22	0	56	2	80 (20%)
6-23m	114	36	1	77	4	118 (29%)
2-4y	116	39	2	75	8	124 (30%)
5-9y	58	18	0	40	4	62 (15%)
10-16y	24	11	0	13	2	26 (6%)
Total	390	126	3	261	20	410
% [1]	95.1%	32.3%	0.8%	66.9%	4.9%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2013-14

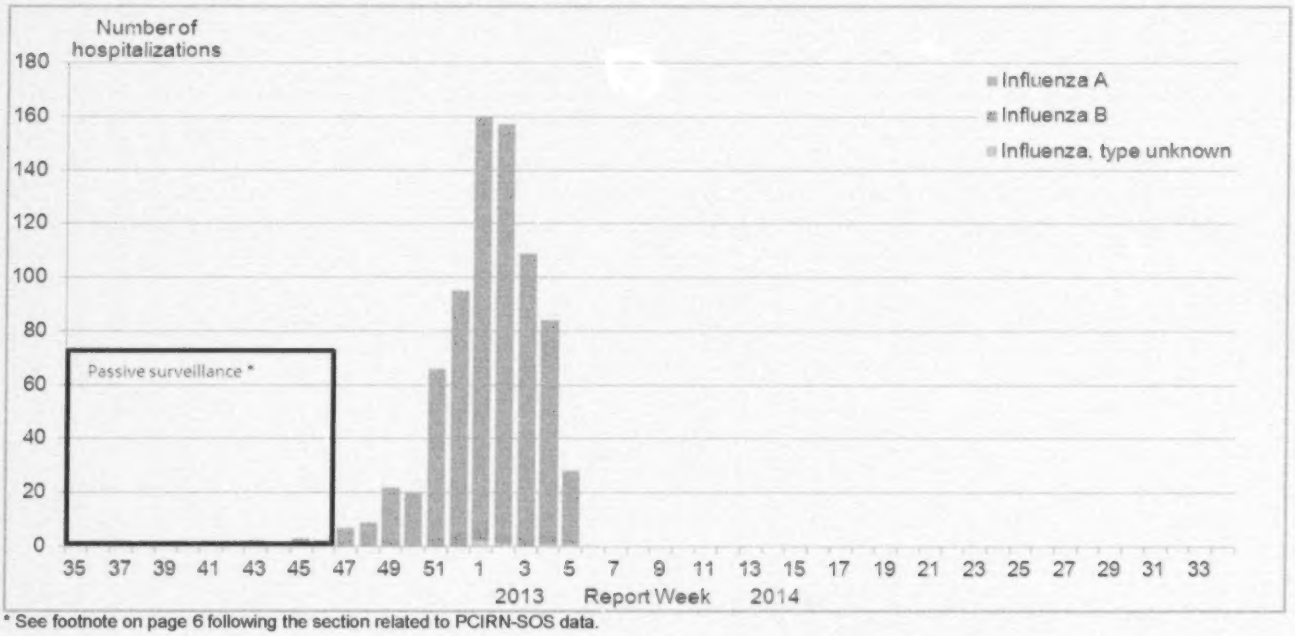
Age groups (years)	Cumulative (25 Aug. 2013 to 1 Feb. 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	5	2	0	3	1	6 (1%)
20-44	166	94	2	70	2	168 (22%)
45-64	301	143	3	155	5	306 (40%)
65+	259	141	13	105	18	277 (37%)
Total	731	380	18	333	26	757
% [1]	97%	52%	2%	46%	3%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available. * Five cases for which the influenza type has not yet been reported, and five cases for which the age-group was not reported, are not included in Table 5.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2013-14
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



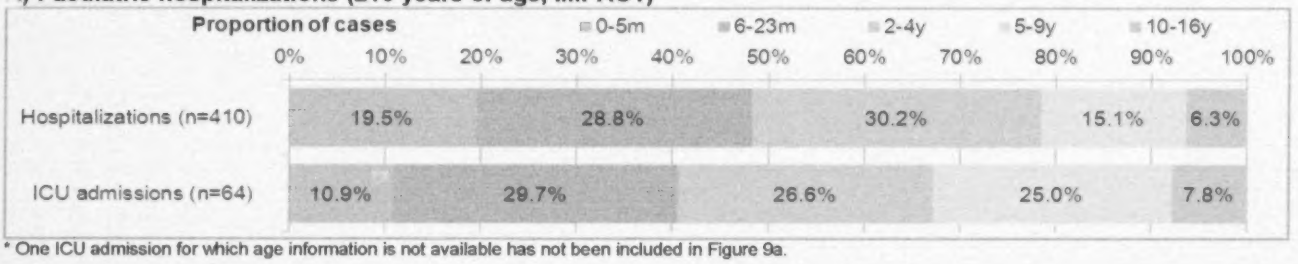
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



* See footnote on page 6 following the section related to PCIRN-SOS data.

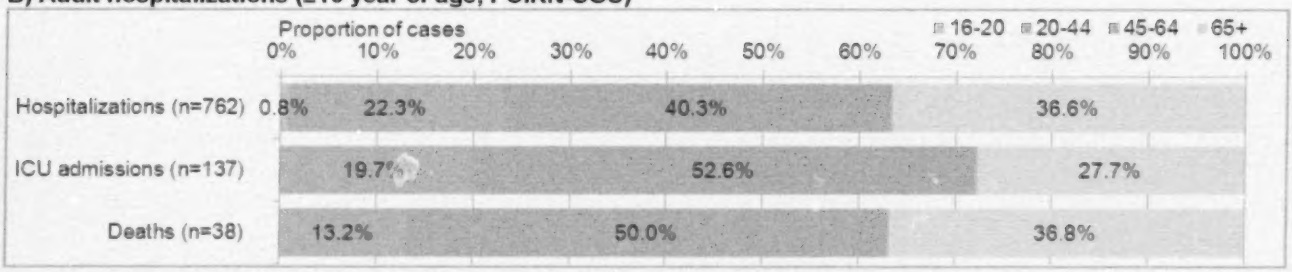
Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2013-14

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



* One ICU admission for which age information is not available has not been included in Figure 9a.

B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 05, 244 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories.* The majority were cases of influenza A (236, 96.7%), of which 99 (41.9%) were A(H1N1)pdm09, 7 (3.0%) were A(H3N2), and 130 (55.1%) were A(unsubtyped). Among the 15 ICU admissions reported in week 05, the majority (11, 73.3%) were adults 20-64 years of age. Twenty-one deaths were reported, just over half of which were adults 20-64 years of age. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total.

To date this season, 2,588 influenza-associated hospitalizations have been reported, 97.6% with influenza A. The majority (58%) of hospitalizations have been cases 45 years of age of older (Table 6). A total of 250 ICU admissions have been reported this season, and 71% were among adults 20-64 years of age. A total of 138 deaths have been reported. The highest proportion of deaths has been among adults 20-64 years of age (51%), followed by adults ≥65 years of age (36%). Influenza B has been detected infrequently among severe cases of influenza to date this season: in only 2.4% of hospitalizations, 0.4% of ICU admissions, and 1.4% of deaths. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2013-14

Age groups (years)	Cumulative (25 Aug. 2013 to 1 Feb. 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	440	232	5	203	14	454 (18%)
5-14	92	51	3	38	6	98 (4%)
15-19	26	16	2	8	1	27 (1%)
20-44	449	333	3	113	4	453 (18%)
45-64	816	542	14	260	8	824 (33%)
65+	642	361	41	240	29	671 (27%)
Total	2465	1535	68	862	62	2527
Percentage[1]	97.5%	62.3%	2.8%	35.0%	2.5%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.
* Sixty-one cases for which age information is not available have not been included in Table 6.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2013-14 on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Forty-nine new cases of human infection with influenza A(H7N9), and seven deaths, have been reported by the World Health Organization since the last FluWatch report. Globally to February 6, 2014, the WHO has been informed of a total of 308 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 63 deaths.

PHAC – Avian influenza A(H7N9)
WHO – Avian Influenza A(H7N9)

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

One new laboratory-confirmed case of MERS-CoV and one death in a previously confirmed case has been reported by the World Health Organization since the last FluWatch report. Globally, from September 2012 to date, the WHO has been informed of a total of 182 laboratory-confirmed cases of infection with MERS-CoV, including 79 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East.

PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)
WHO – Coronavirus infections

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

EuroFlu weekly electronic bulletin

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2013-2014 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

- **Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
- **Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
- **Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.
- **Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.